

**State of California
AIR RESOURCES BOARD**

EXECUTIVE ORDER DE-09-006

Pursuant to the authority vested in the Air Resources Board by Health and Safety Code, Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code section 39515 and 39616 and Executive Order G-02-003;

Relating to Verification under sections 2700 through 2710 of Title 13 of the California Code of Regulations:

Rypos, Inc.
Active Diesel Particulate Filter (ADPF)

The California Air Resources Board (ARB) staff has reviewed Rypos' request for verification of their active diesel particulate filter system (Rypos ADPF). Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of ARB hereby finds that the Rypos ADPF reduces emissions of diesel particulate matter (PM) consistent with a Level 2 device (greater than or equal to 50 percent reduction) (Title 13 California Code of Regulations (CCR) sections 2702 (f) and 2708) and complies with the CARB January 1, 2009, NO₂ limit (Title 13 California Code of Regulations (CCR) Appendix A section 2702 (f) and section 2706 (a)). Accordingly, the Executive Officer determines that the Rypos ADPF merits verification as a Level 2 Plus system for diesel engines on marine harbor craft, subject to the terms and conditions specified below.

This verification is subject to the following terms and conditions:

- The engine must be used in a marine harbor craft application associated with propulsion or auxiliary use.
- The engine is greater than 50 hp and, a certified marine engine originally manufactured from model year 2004 through 2009 and has an engine family name listed in Attachment 1, a marine engine modified with the Clean Cam Technology System (CCTS) technology, or another marine engine meeting the terms and conditions specified herein.
- The engine must be a certified marine engine with certified particulate matter (PM) emission levels less than or equal to 0.2 g/bhp-hr or a marine engine having known particulate matter (PM) emission levels less than or equal to 0.2 g/bhp-hr (as tested on an appropriate steady-state certification cycle – similar to ISO 8178 E3 or E5).
- The engine must be in its original certified configuration if it is a certified engine.
- The engine must not employ exhaust gas recirculation.
- The engine must not have a pre-existing oxidation catalyst.
- The engine must not have a pre-existing diesel particulate filter.

- The engine can be a two or four-stroke.
- The engine can be turbocharged or naturally-aspirated.
- Rypos must review actual operating conditions (duty cycle, baseline emissions, exhaust temperature profiles, and engine backpressure) prior to retrofitting an engine with the ADPF to ensure compatibility.
- The engine should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- The product must not be operated with fuel additives, as defined in section 2701 of Title 13, of the CCR, unless explicitly verified for use with fuel additive(s).
- The other terms and conditions specified in Table 1 below.

Table 1: Summary of Conditions for the Rypos ADPF System	
Parameter	Value
PM Verification Level	Level 2 Plus <ul style="list-style-type: none"> • PM - at least 50% reduction • NO₂ - meets January 2009 limit
Regeneration System	Active
Applications	Marine Harbor Craft
Engine Type	Diesel-fueled, with or without turbocharger, that have particulate matter (PM) emission levels less than or equal to 0.2 g/bhp-hr consisting of either certified marine engines, marine engines modified with the CCTS technology, or marine engines having known PM emission levels based on certification or in-use emissions testing with an appropriate steady-state certification cycle.
Engine Models	Engine models conforming to Engine Type above and 2004 or newer certified marine engines listed in Attachment 1.
Engine Horsepower	Greater than 50 hp
Fuel	California diesel fuel with less than or equal to 15 ppm sulfur or a biodiesel blend provided that the biodiesel portion of the blend complies with ASTM D6751, the diesel portion of the blend complies with Title 13 (CCR), sections 2281 and 2282, and the blend contains no more than 20 percent biodiesel by volume.
Minimum Exhaust Temperature for Filter Regeneration	Not Applicable (NA). Active DPF
Maximum consecutive minutes at idle	NA. Active DPF
Number of Cold Start and 30 Minute Idle Sessions before Regeneration Required	NA. Active DPF.
Number of Hours of Operation Before Cleaning of Filter Required	Inspect every 1000 hours and clean if needed. Active DPF.

The Rypos ADPF consists of a filter housing, electrical control circuit, and filter cartridges made of sintered metal fibers, referred to as an active sintered metal diesel particulate filter.

This Executive Order is valid provided that installation instructions for Rypos ADPF do not recommend tuning the engine to specifications different from those specified by the engine manufacturer.

Prior to sale of a Rypos ADPF, Rypos Incorporated must provide each prospective owner/purchaser of the Rypos ADPF with a written estimate of the number of hours of engine operation that will typically elapse before regeneration is required. Rypos Incorporated must also provide, in writing, the length of time of a typical regeneration event.

No changes are permitted to the device unless approved by the ARB. ARB must be notified in writing of any changes to any part of the Rypos ADPF and these changes must be evaluated and approved by ARB. Failure to report any changes shall invalidate this Executive Order.

Changes made to the design or operating conditions of Rypos ADPF which adversely affect the performance of the engine's pollution control system shall invalidate this Executive Order.

Marketing of the Rypos ADPF using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from ARB.

As specified in the Diesel Emission Control Strategy Verification Procedure (Title 13 CCR section 2706 (j) (2)), ARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is:

CA/RYP/2009/PM2+/N00/OFF/DPF01

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, Rypos, Inc., is responsible for recordkeeping requirements (CCR, Title 13, section 2702), honoring their warranty (section 2707) and conducting in-use compliance testing (section 2709).

This Executive Order is valid provided that the diesel fuel used in conjunction with the device complies with CCR, Title 13, sections 2281 and 2282, and if biodiesel is used, the biodiesel blend shall be 20 percent or less subject to the following conditions:

- The biodiesel portion of the blend complies with the American Society for Testing and Materials specification D6751 applicable for 15 parts per million sulfur content, and
- The diesel fuel portion of the blend complies with CCR, Title 13, sections 2281 and 2282.

Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this Executive Order.

In addition to the foregoing, ARB reserves the right in the future to review this Executive Order and the verification provided herein to assure that the verified system continues to meet the standards and procedures of California Code of Regulations, Title 13, section 2222, et seq and California Code of Regulations, Title 13, sections 2700 through 2710.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

Executed at Sacramento, California, this ____17__ day of April 2009.

James N. Goldstene
Executive Officer
by

/s/

Robert Fletcher, Chief
Stationary Source Division

Attachment 1: ARB Approved Model Year 2004 to 2009 Marine Engine Families for the Rypos ADPF.